



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/583,245	05/31/2000	Wai-Kwong (Sam) Lee	99,027	2848
21253	7590	01/30/2004	EXAMINER	
CHARLES G. CALL 68 HORSE POND ROAD WEST YARMOUTH, MA 02673-2516			NGUYEN BA, PAUL H	
			ART UNIT	PAPER NUMBER
			2176	2

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/583,245

Applicant(s)

LEE ET AL.

Examiner

Paul Nguyen-Ba

Art Unit

2176

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 5/31/2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Notice to Applicant*

1. This action is in response to original application as filed on May 31, 2000.
2. Claims 1-20 have been considered. Claims 1 and 14 are independent claims.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. ("Chang"), U.S. Patent No. 6,584,459, in view of Chau et al. ("Chau"), U.S. Patent Application Publication No. US 2002/0123993 filed on Nov. 29, 2000; Provisional Application No. 60/168,659 file on December 2, 1999.

### **Independent Claim 1**

Chang discloses *a method for storing an XML document in a relational database system* (see Title and Abstract) which comprises, in combination, the steps of:

*parsing the character data in said XML document to identify characters representing data values within at least some of the elements of said XML document* (see Figure 2; col. 10, lines 9-17; col. 14, lines 43-46; col. 16, lines 56-59; col. 22, lines 27-36),

Art Unit: 2176

*storing each of said data values in a specified column location in one or more specified rows of one or more specified tables in said relational database system (see col. 3, lines 26-64; col. 12, lines 36-48; col. 13, lines 28+; col. 26, lines 9-34),*

*removing at least some of said data values from said XML document and storing the remainder of said XML document in said database as an XML skeleton which defines the structure of said XML document (see Figures 8-12; col. 14, lines 19-50; col. 15, lines 24+; col. 16, lines 56+ → i.e. structure indexes).*

Chang does not specifically disclose *reconstructing said XML document by merging the data content of said specified rows with said XML skeleton.*

However, Chau discloses a technique for automatically generating one or more XML documents from a relational database by mapping relational data to XML structure data (see Abstract; Figures 7, 9, and 10, 11; pg. 2, [0017]-[0019]; pg. 30, [057]+) for the purpose of avoiding the time consumption and inefficiency in having the user manually convert relational data into XML documents.

Since Chau and Chang are both from the same field of endeavor, the purposes disclosed by Chau would have been recognized in the pertinent art of Chang. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teaching of Chang with the teachings of Chau to include a technique for automatically generating one or more XML documents from a relational database by mapping relational data to XML structure data for the purpose of avoiding the time consumption and inefficiency in having the user manually convert relational data into XML documents.

## **Claim 2**

Art Unit: 2176

Chang discloses the method set forth in claim 1 wherein *the data value stored in each of said specified columns is obtained from a leaf element of said XML document which contains no sub element* (see Figure 12; col. 16, lines 56-67 to col. 17-21).

**Claim 3**

Chang discloses the method set forth in claim 2 wherein *the data values stored in each given one of said specified rows is obtained from an XML element which contain one or more of given ones of said leaf elements, the data values in said given ones of said leaf elements being stored in columns in said given one of said specified rows* (see Figure 12; col. 16, lines 56-67 to col. 17-21; and Summary).

**Claim 4**

Chang discloses the method set forth in claim 3 further including *the step of storing data describing the properties of at least selected ones of said data values* (see col. 7, lines 54+).

**Claim 5**

Chang discloses the method set forth in claim 4 wherein *said properties include the designation of one or more of said data values as a primary key for use by said relational database system* (see col. 12, line 59; col. 13, lines 1–13).

**Claim 6**

Chang discloses the method set forth in claim 5 wherein *said properties further include the designation of the data type for at least some of said data values* (see col. 3, lines 34-45; col. 7, lines 54+; col. 8, lines 63+).

**Claim 7**

Art Unit: 2176

Chang discloses the method set forth in claim 6 wherein *said properties further include the designation of one or more of said data values as indexing values* (col. 18, lines 48-67 → i.e. tree index manager).

#### **Claim 8**

Chang discloses the method set forth in claim 1 further including the *step of designating one or more of said elements of said XML documents as static elements and for identifying said static elements during said step of removing at least some of said data values to prevent removal of the data values in said static elements so that said data values in said static elements are retained in said XML skeleton* (see col. 14, line 19+ – Enablement of an XML Index; see specifically col. 16, lines 54+ - tag values are static elements which are retained in the structure index).

#### **Claim 9**

Chang discloses a method for storing an XML document in a relational database system, but does not specifically disclose *the step of performing a relational database operation to modify the data value stored in at least one of said column locations such that the step of reconstructing said XML document produces a modified XML document*.

However, Chau discloses a method of creating triggers for insert, update, and delete on the XML column so that the side tables are populated and modified to reflect the main table so that the step of reconstructing the XML document produces a modified XML document for the purpose of processing XML documents in relational databases (see Figure 4; pg. 10, [0217]; pg. 21, [0626]; pg. 74, claim 9; pg. 75, claim 29; pg. 76, claim 49).

Art Unit: 2176

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teaching of Chang with the teachings of Chau to include a method of creating triggers for insert, update, and delete on the XML column so that the side tables are populated and modified to reflect the main table so that the step of reconstructing the XML document produces a modified XML document for the purpose of processing XML documents in relational databases.

**Claim 10**

Chang discloses the method for *storing an XML document as set forth in claim 4 wherein said step of storing data describing the properties of at least selected ones of said data values comprises means for storing an XML Descriptor which includes information obtained from the document type definition (DTD) associated with said XML document (col. 12, lines 34-60 → i.e. DTD reference table).*

**Claim 11**

Chang discloses the method set forth in claim 10 wherein *said XML Descriptor further specifies one or more of the elements of said XML document which contain primary key data values, and wherein said step of removing at least some of said data values does not remove said primary key data values but instead retains said primary key values in said skeleton (see col. 12, line 59; col. 13, lines 1-13; col. 14, line 19; col. 16, lines 54+ → tag values are static elements which are retained in the structure index).*

**Claim 12**

Art Unit: 2176

Chang discloses the method set forth in claim 11 wherein *said XML Descriptor further specifies the data type of the data values in one or more specified elements of said XML document* (see col. 3, lines 34-45; col. 7, lines 54+; col. 8, lines 63+).

### **Claim 13**

Chang discloses the method set forth in claim 12 wherein *said XML Descriptor further identifies one or more of said data values as indexed data values* (col. 18, lines 48-67 → i.e. tree index manager).

### **Independent Claim 14**

Chang discloses *an apparatus for storing an XML document in a relational database* (see Title and Abstract) *which comprises, in combination, the steps of*

*means for parsing said XML document to identify one or more element data values stored in one or more corresponding named elements of said XML document* (see Figure 2; col. 10, lines 9-17; col. 22, lines 27-36),

*means for parsing said XML document to derive tree definition data which specifies the hierarchical relationship between the said named elements of said XML document* (see Figures 8-12; col. 14, lines 43-46; col. 16, lines 56-59),

*means for storing said data values in one or more specified column locations in one or more rows of one or more relational tables in said relational database* (see col. 3, lines 26-64; col. 12, lines 36-48; col. 13, lines 28+; col. 26, lines 9-34),

*means for storing said tree definition data in said relational database* (see Figures 8-12; col. 14, lines 19-50; col. 15, lines 24+; col. 16, lines 56+ → i.e. structure indexes),



Art Unit: 2176

*means for performing one or more relational operations on one or more of said data values stored in said one or more tables* (see col. 6, lines 38-45 → Structured Query Language).

Chang does not specifically disclose *a means for reconstructing said XML document by combining said data values stored in said relational tables with said tree definition data stored in said database.*

However, Chau discloses a technique for automatically generating one or more XML documents from a relational database by mapping relational data to XML structure data (see Abstract; Figures 7, 9, and 10, 11; pg. 2, [0017]-[0019]; pg. 30, [057]+) for the purpose of avoiding the time consumption and inefficiency in having the user manually convert relational data into XML documents.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teaching of Chang with the teachings of Chau to include a technique for automatically generating one or more XML documents from a relational database by mapping relational data to XML structure data for the purpose of avoiding the time consumption and inefficiency in having the user manually convert relational data into XML documents.

#### **Claim 15**

Chang discloses an apparatus for storing an XML document in a relational database system with *means for performing one or more relational operations includes means for dynamically modifying one or more of said data values* (see col. 6, lines 38-45 → Structured Query Language), but does not specifically disclose *means for reconstructing said XML*

Art Unit: 2176

*document produces a modified XML document containing data values modified by said one or more relational operations.*

However, Chau discloses a technique for automatically generating one or more XML documents from a relational database by mapping modified relational data to XML structure data (see Abstract; Figures 7, 9, and 10, 11; pg. 2, [0017]-[0019]; pg. 30, [057]+) for the purpose of avoiding the time consumption and inefficiency in having the user manually convert relational data into XML documents.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teaching of Chang with the teachings of Chau to include a technique for automatically generating one or more XML documents from a relational database by mapping modified relational data to XML structure data for the purpose of avoiding the time consumption and inefficiency in having the user manually convert relational data into XML documents.

#### **Claim 16**

Chang discloses an apparatus as set forth in claim 15 wherein *said relational operations include queries which selectively retrieve and perform designated operations with respect to said data values* (see Title, Abstract, col. 3, lines 34-60).

#### **Claim 17**

Chang discloses an apparatus as set forth in claim 15 wherein *said relation operations include operations which delete or modify one or more of said data values and wherein said apparatus further includes means for storing relational integrity constraints which regulate the*

Art Unit: 2176

*performance of said operations which delete or modify* (see col. 12, lines 51-60; col. 13, lines 1-13 → i.e. *not null, primary key*).

#### **Claim 18**

Chang discloses an apparatus as set forth in claim 14 further including *means for storing data type designations for one or more of said named elements of said XML documents and for storing data values in said relational database in accordance with said data type designations* (see col. 3, lines 34-45; col. 7, lines 54+; col. 8, lines 63+).

#### **Claim 19**

Chang discloses an apparatus as set forth in claim 14 wherein *said means for storing tree definition data includes means for removing one or more of said element data values from said XML document and for storing the remainder of said XML document as an XML skeleton* (see Figures 8-12; col. 14, lines 19-50; col. 15, lines 24+; col. 16, lines 56+ → i.e. structure indexes).

#### **Claim 20**

Chang discloses an apparatus as set forth in claim 19 wherein *said means for reconstructing said XML document comprises means for re-inserting said data values from said relational tables into said XML skeleton and for generating the merged combination of said skeleton and said data values as an XML document* (see Abstract; pg. 2, [0018], [0019] → maps data values from relational table to form a merged XML document defined by the DAD).

Art Unit: 2176

***Conclusion***


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Nguyen-Ba whose telephone number is (703) 305-8776.

The examiner can normally be reached from 9 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (703) 305-9792. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

PNB

  
JOSEPH H. FEILD  
PRIMARY EXAMINER